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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/624,796	07/25/2000	Brig Barnum Elliott	00-4017	7220

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VERIZON CORPORATE SERVICES GROUP INC.
C/O CHRISTIAN R. ANDERSON
600 HIDDEN RIDGE DRIVE
MAILCODE HQEO3HO1
IRVING, TX 75038

EXAMINER

DO, NHAT Q

ART UNIT PAPER NUMBER

2663

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/624,796

Applicant(s)

ELLIOTT ET AL.

Examiner

Nhat Do

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 3-11, 33-38 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 3-11, and 34-38 contain objectionable functional language.

Claim 1, lines 3, 5, 7, 9, and 11 contain the phrase "configured to..."

Claim 3, lines 2 contains the phrase "configured to..."

Claim 4, line 2 contains the phrase "configured to..."

Claim 5, line 2 contains the phrase "configured to..."

Claim 6, line 2 contains the phrase "configured to..."

Claim 7, line 2 contains the phrase "configured to..."

Claim 8, line 2 contains the phrase "configured to..."

Claim 9, line 2 contains the phrase "configured to..."

Claim 10, line 2 contains the phrase "configured to..."

Claim 11, line 2 contains the phrase "configured to..."

Claim 34, lines 3, and 6 contain the phrase "configured to..."

Claim 35, line 2 contains the phrase "configured to..."

Claim 36, line 2 contains the phrase "configured to..."

Claim 37, line 2 contains the phrase "configured to..."

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Claim 38, line 2 contains the phrase “configured to...”

Since the use of the language “configured to...” makes the corresponding claims vague as to whether the functional limitations are within the scope of the claimed subject matter when there are no corresponding structures recited that perform these particular functions.

Since the functional limitations are not positively recited, the actual functions such as “transfer” (claim 1) or “emulate” (claim 34) are modified by the expression “configured to”. These make it not clear whether the claimed subject matter includes devices that perform the associated functions or not. Since the specification fails to provide guidance in how to properly interpret the meaning of “configured to”, the scope of the invention is not clear. Applicants should either cancel this phrase, or provide written guidance in interpreting this phrase in order to establish a definite boundary to the claims’ scope of protection.

Furthermore, there is insufficient structure to provide for the functional language. Claim 35-38 recites a “system for performing testing protocol for an ad hoc network”. The specification discloses that the system requires a control 110 (figure 1) to mastermind the operation. However, claim 34 does not associate the above limitation. Thus the scope is not clear in the system of claim 34 what device is included in order that the system is capable of performing the testing protocol.

Claim 33 is indefinite because the claim should depend on (for example) claim 24 instead of claim 34 because claim 34 is not a computer-readable medium.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 8-15, 18, 20-25, 28, 30-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Emulation of Ad-Hoc Networks on IEEE 802.11 by Kubinszky et al.

Regarding to claim 1, Kubinszky et al disclose a system for testing protocols for a network (figure 3) having a plurality of network devices, comprising:

A simulation controller (Server NS);

One or more nodes (emulated, and simulated nodes), each node being configured to emulate at least one of the plurality of network devices and comprising:

A traffic generator configured to generate, in response to the configuration information, traffic during the protocol testing, and an emulator configured to simulate transmission characteristics of the network (since the emulated nodes receives data from 10Mbit/s Ethernet traffic generators TG (Page 448, figure 3; page 449, lines 15-19), it is inherent that the emulated nodes emulate a device comprise a traffic generator to generate data in a suitable protocol used by the tested ad hoc network (based on the received data from the traffic generators TG)); and

An analysis device (visualization tool (Page 448, line 7)) configured to monitor the one or more nodes during the protocol testing and analyze the monitoring (Page 449).

Kubinszky et al fail to disclose the simulation controller (Server NS) transmits network configuration information; and the nodes comprise an emulator for simulating transmission characteristics of the network. However, Kubinszky et al disclose that there are different routing protocols available (Page 448, lines 1-8); therefore, for simulating all the available protocols, a

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skilled artisan would have been motivated to have the simulation controller (Server NS) designed so that it transmits to the nodes of ad hoc network to inform which protocol the network is configured to run in each particular simulation, and consequently, have an emulator added to the nodes so that it process data depending on the simulated protocol.

Therefore, it would have been obvious to a person having ordinary skill in the art by the time the invention was made to make the simulation controller (Server NS) transmits network configuration information and add an emulator to the node for simulating transmission characteristics of the network.

Regarding to claim 2, Kubinszky et al disclose the network is an ad hoc network and each of the plurality of network devices is an ad hoc network device (Page 447, 3rd paragraph; page 449, 2nd paragraph).

Regarding to claim 3, further to the rejection of claim 1, after modifying the network in figure 3 for testing multiple protocols, it is inherent that the (test scenario providing) configuration information is transmitted to the nodes prior the protocol testing in order to let the node how to process the test data.

Regarding to claim 8, Kubinszky et al fail to disclose explicitly transmitting stimuli to the nodes, and the stimuli cause one or more nodes to (cease operation, malfunction, begin erroneous transmissions, or) start or stop collecting testing information.

However, Kubinszky et al disclose, in testing a live network, a real time scheduler is used to that all the tasks are done at the right moment (Page 448, lines 12-15). This suggestion would have been motivated a person of ordinary skill in the art to transmit stimuli (control signal) to the nodes in order to indicate the nodes when the test should be start or stops in order to monitor the

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test properly in testing a live network. Therefore, it would have been obvious to a person having ordinary skill in the art by the time the invention was made to transmitting stimuli to the nodes, and the stimuli cause one or more nodes to (cease operation, malfunction, begin erroneous transmissions, or) start or stop collecting testing information.

Regarding to claim 9, Kubinszky et al fail to disclose the nodes receive, prior to emulating, software for the protocols and application programs associated with the at least one network device that the respective node is emulating.

However, it is well known in the art that a procedure can be implemented by using hardware, software, or firmware. Each way has its own trade-off characteristics. Using software gives more flexibility in modifying the system because what must be done is just replacing the program.

Therefore, in order to use one system to simulate different routing protocols as mentioned by Kubinszky et al, a person of ordinary skill in the art would have been motivated to implement the nodes by software, which can be easily modified by using the server NS.

Consequently, it would have been obvious to a person having ordinary skill in the art by the time the invention was made have the nodes designed so that the nodes receive, prior to emulating, software for the protocols and application programs associated with the at least one network device that the respective node is emulating.

Regarding to claim 10, Kubinszky et al disclose each node in the ad hoc network can be some desktop machines such as printers or projectors (Page 447, 3rd paragraph). Kubinszky et al also disclose the test can be done on a live network (Page 448, line 12). The Examiner is in the position one of the node emulates two or more device in the case of testing a live network.

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Regarding to claim 11, for the ad-hockey displays the testing result as Kubinszky et al discloses on page 449, and 450, it is inherent that the nodes collect and transfer the testing information to the analysis device.

Regarding to claim 12, the TG is testbed network.

Regarding to claim 13, the claim recites the rejected limitations of claim 1, which are:

A system for testing protocols for a network having a plurality of network devices, the system comprising:

Means (the emulated nodes) for emulating at least one of the plurality of network devices, the means for emulating comprising:

Means for generating traffic during the protocol testing in response to configuration information, and

Means for simulating transmission characteristics of the network;

Means (server NS) for monitoring the means for emulating during the protocol testing; and

Means (ad-hockey tool) for analyzing an output of the means for monitoring.

Regarding to claim 14, in order to let the server NS simulate different routing protocols as disclosed in the rejection of claim 1, it is inherent there are steps of:

Selecting protocol configuration settings to be tested;

Establishing the protocol configuration settings in each of one or more nodes, each node being configured to emulate at least one of the plurality of communication devices;

Simulating operation of the network;

Monitoring the operation; and

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Analyzing the monitoring to determine protocol suitability.

Regarding to claims 15, 18, 20, and 21, the claims recite the rejected limitations of claims 2, 8, 11, and 12 respectively.

Regarding to claim 22, for displaying the simulation result as disclosed by Kubinszky et al on page 449, it is inherent that tracing the transmission is performed.

Regarding to claim 23, since the test network is a real network, it is inherent the simulating operation of the network is in real time.

Regarding to claims 24, 25, 28, and 30-33, the claims recite a computer-readable medium containing instructions for processors to perform the rejected steps of claims 14, 15, 18, and 20-23, respectively.

Although Kubinszky et al fail to disclose explicitly a computer-readable medium containing instructions for processors to perform these steps. However, it is well known in the art that a procedure can be implemented by using hardware, software, or firmware. Each way has its own trade-off characteristics. Using software gives more flexibility in modifying the system because what must be done is just rewriting the program.

Therefore, it would have been obvious to a person having ordinary skill in the art by the time the invention was made to write a program of instructions for performing the steps of claims 14, 15, and 20-23. A skilled artisan would have been motivated to so in order to employ the flexibility in modifying the system.

Regarding to claim 34, the claim recites the rejected limitations of claim 1, which are:

A system for testing protocols for an ad hoc network, the ad hoc network having a plurality of ad hoc devices, the system comprising:

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A plurality of nodes, each node being configured to emulate at least one of the plurality of ad hoc devices, generate and receive traffic, and simulate transmission characteristics; and

An analysis device configured to monitor the plurality of nodes, collect test information, and analyze the test information.

Regarding to claim 35, the claim recites the rejected limitations of claim 11, which are:

The system of claim 34 wherein the plurality of nodes are further configured to:

Collect performance information during the testing, and

Transmit the performance information to the analysis device.

Regarding to claims 36, the claim recites an inherent feature the rejected limitations of claim 1, which is:

The system of claim 35 wherein, when analyzing, the analysis device is configured to: analyze the test information and the performance information to determine protocol suitability.

Regarding to claims 37, the claim recites an inherent feature the rejected limitations of claim 7, which are:

The system of claim 34 wherein each of the plurality of nodes is further configured to: receive at least one characteristic matrix, the at least one characteristic matrix changing the simulated transmission characteristics.

Regarding to claims 38, the claim recites an inherent feature the rejected limitations of claim 7, which are:

The system of claim 34 wherein at least one of the plurality of nodes is further configured to: receive stimulus during the testing, the stimulus changing operation of the at least one node.

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5. Claims 4-7, 16, 17, 19, 26, 27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubinszky et al as applied to claim 1 above, and further in view of "Routing in Mobile Ad Hoc networks" by Schult et al.

Regarding to claims 4, and 5, Kubinszky et al fail to disclose transmitting at least one set of a terrain set, trajectory set, and a traffic control module to the nodes.

Schult et al disclose a simulation module; wherein terrain, trajectory, and traffic control are considered (page 11). A skilled artisan would have been motivated to test the Kubinszky et al in different terrain, trajectory, and traffic control conditions in order to fully predict the operation of the system in reality. Furthermore, since each testing scenario requires different setting, a skilled artisan would have been further motivated to set the nodes in an appropriate mode for each specific tested scenario.

Consequently, it would have been obvious to a person having ordinary skill in the art by the time the invention was made to transmitting at least one set of a terrain set, trajectory set, and a traffic control module to the nodes prior the protocol test.

Regarding to claim 6, script is equivalent to the information about terrain set, trajectory set, and a traffic control, which is rejected in the rejection of claim 4, and 5.

Regarding to claim 7, Kubinszky et al fail to disclose transmitting characteristic matrix representing changing network transmission characteristics.

Schult et al disclose network characteristics changes (Page 11, part III); therefore, a skilled artisan would have been motivated to transmit characteristic matrix representing changing network transmission characteristics to the nodes in order to examine the operation of the system fully.

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Regarding to claims 16, 17, and 19, the claims recite the rejected limitations of claims 4, 6, and 7 respectively.

Regarding to claims 26, 27, and 29, the claims recite a computer-readable medium containing instructions for processors to perform the rejected steps of claims 16, 17, and 19 respectively.

Although Kubinszky et al and Schult et al fail to disclose explicitly a computer-readable medium containing instructions for processors to perform these steps. However, it is well known in the art that a procedure can be implemented by using hardware, software, or firmware. Each way has its own trade-off characteristics. Using software gives more flexibility in modifying the system because what must be done is just rewriting the program.

Therefore, it would have been obvious to a person having ordinary skill in the art by the time the invention was made to write a program of instructions for performing the steps of claims 16, 17 and 19. A skilled artisan would have been motivated to so in order to employ the flexibility in modifying the system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhat Do whose telephone number is (703) 305-5743. The examiner can normally be reached on 8:30 AM - 5:30 PM Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (703) 308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-308-6743.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Nhat Do
Examiner
Art Unit 2663

ND

November 5, 2003.



MELVIN MARCELO
PRIMARY EXAMINER